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transactions at or as close as possible to the "market" price of the goods satisfying. By definition, the market price is the price (in given currency terms) that a fully educated market, given full access will transact select goods. Discovery of the market price can only be accomplished by permitting full access to the transaction by essentially all potential buyers and sellers and allowing expression of each party's desires. However, the buyer-seller transaction must be structured to operate at very low costs -- or it will distort the market price of goods with artificially high transaction costs. Thus, the two keys to effective buyer/seller transactions -- full access of expression and knowledge coupled with low transaction costs -- can be and are often conflicting, necessitating trade-offs between trading efficiency and market knowledge.

At column 1, line 54 through column 2, line 5, please replace the paragraph there with:

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Open outcry auction techniques, modified over time, have also found successful application in many trading activities, including the buying and selling of farm produce and livestock, commodities contracts, futures contracts on a variety of items and -- particularly germane to the preferred embodiment of the present invention -- fixed income securities. These trading activities focus on the buying and selling of essentially fungible items, that is, items that are without

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meaningful differentiation from like items on the market. For example, a bushel of wheat for February delivery is considered for sale and delivery at a price independent of its source. Similarly, a 30-year U.S. Treasury bond paying a coupon rate of 8 percent and having a July 1996 issue date is indistinguishable from other 30-year treasuries having the same properties. Accordingly, the price buyers are willing to pay and sellers are willing to accept defines the market price of all 30-year treasury bonds of that same vintage, allowing a source transparent application of open outcry auction trading.

At column 2, lines 6-13, please replace the paragraph there with:

B3

The fixed income securities issued by the United States government are known as U.S. Treasuries. These instruments typically span maturities of 13 to 52 weeks (T-bills), one to ten years (notes), and up to 30 years (Bonds). T-Bills are pure discount securities having no coupons. Almost all other Treasuries having longer terms are coupon notes or bonds, with a defined interest payment cycle of semi-annual payments to the holder. An additional and more recent type of Treasury

At column 2, lines 14-25, please replace the paragraph there with:

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Although treasuries are used exclusively in the following discussions, the principles of the present

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invention may be applied to other types of assets, including securities, financial instruments, commodities, and their derivatives without departing from the inventive concepts. One important attribute of treasuries, in the context of the present invention, is the minimal and uniform default risk; the issuance of U.S. government paper removes the default risk as a defining criteria in the relative pricing of treasuries in the market place when they are backed by the full faith and credit of the U.S. government.

At column 2, lines 26-41, please replace the paragraph there with:

B5

New Treasury securities are auctioned by the U.S. government at preestablished auction dates. The auction prices for newly issued Treasuries having a face value with a set coupon rate defines the Treasuries' yields when issued. After the auction, the Treasuries enter the secondary market and are traded typically "over the counter," i.e., without a defined exchange. As inflation expectations and supply and demand conditions change, the prices of recently auctioned Treasuries fluctuate on the secondary market. The new prices are reflected by competing bid and offer prices communicated among institutions, banks, brokers, and dealers in the secondary market. For example, the yield of a treasury note increases as its price drops in the market,

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typically reflecting an overall increase in the interest rates for that term of security.

At column 2, lines 51-58, please replace the paragraph there with:

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Accordingly, the very size and diversity of the treasury market requires a high level of sophistication by market participants in the bidding, offering, buying, and selling transactions involving these securities. The very complexity associated with the transaction and the scale of trading undertaken by banks, brokers, dealers, and institutional participants necessitates a rigidly structured approach to trading.

At column 3, lines 22-40, please the paragraph there with:

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The many permutations of this process will be discussed in detail below. At this juncture, suffice to say that, at lower volumes of transactions existing at the time of its development, and the lack of suitable alternatives, the open outcry auction process remained the dominant trading mechanism for decades. However successful, this approach was not perfect. Indeed, in recent years, some of the problems in an open outcry auction forum have been amplified by the vastly increased level of trading now undertaken in the fixed income field. Generally, difficulties would occur by the injection of trader personalities into the open outcry

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auction process. For example, a loud, highly vocal representative may in fact dominate trading-and transaction flow -- even though the representative may only represent a smaller and less critical collection of customers. Although such aggressive actions at open outcry auction may be beneficial to those particular customers in the short run, overall, such dominance of the trading can and will distort pricing away from the actual market conditions.

At column 4, lines 1-4, please the sentence there with:

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It is another object of the present invention to provide a data processing method supporting a transaction enabling process for trading securities at accelerated levels with few errors and low costs.

At column 4, lines 15-19, please replace the sentence there with:

It is another object of the present invention to provide an apparatus for the select processing of several types of data wherein data is qualified prior to use, and for translating the qualified data into order and trading states for fixed income securities.

At column 4, lines 24-28, please replace the sentence there with:

B⁹

It is yet another object of this invention to provide a computer system that includes multiple workstations linked by high speed communication paths to permit rapid distribution and exchange of market data to participants.

At column 4, line 54, through column 5, line 6, please replace the paragraph there with:

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The above and other objects of the invention are provided by a computer-based, data processing system having program controlled logic for managing select trading. The data processing system employs a plurality of trading workstations linked with a server for coordinated data flow and processing. Communication is provided by a network, such as, for example, an Ethernet, token ring, token bus, or other hierarchical LAN and/or WAN configuration. The system preferably includes a dedicated keypad for input at each workstation that provides individually programmed keystroke commands; alternatively, other keyboards, keypads or voice controlled electronic devices can be used with the present system. Central processing logic dictates the available order, trading and allocation options, and screen displays for each workstation. As orders and transactions are entered, various protocols affect the allocation of bid-offer control, priority generation, exclusive trading time, and interactive trade management.

As trades are completed, the system updates a linked database with newly entered transactional data.

At column 5, lines 7-10, please replace the paragraph there with:

B11
In accordance with the present invention, the controlling logic provides a sequence of trading states for each participant. The five states are:

At column 5, lines 20-28, please replace the paragraph there with:

B12
As various transactions are entered, workstations operate in one of these five states. The workstation "state" determines the options available to that trader -- and thus controls the flow of orders and trades in a cost-efficient and error-free manner. While participants may implement trading on similarly configured workstations, the protocols are universal for all traders, thereby precluding aggressive control of transactions without true capital commitment.

At column 5, lines 55-67, please replace the paragraph there with:

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The present invention is directed to a data processing system for implementing complex trading rules in support of select transactions. The first aspect of the invention relates to a particular hardware arrangement that provides a specifically tailored

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platform for processor enhanced and supported trading. This hardware arrangement encompasses a plurality of custom designed workstations linked together for communication. Each workstation is linked to a central server that orchestrates the trading process in accordance with program controlled logic. The workstation includes a display for presenting the particulars of trading activity. A customized keypad permits enhanced data/position entry by the broker.

At column 6, lines 1-14, please replace the paragraph there with:

B14

The second aspect of the invention is the governing logic for controlling system dynamics. This logic is stored in system memory and provides the sequence of protocols and rules that allocate trading priority. The logic also provides system responses to operative commands entered by the brokers at the workstations. The system logic is important in two ways. First, it is important as the guiding principles underlying the system and thus performance is tied directly thereto. Second, system logic must be known to all participants as the rules dictating market access and response -- to eliminate any confusion and to place participants on as close to an equal footing as possible. The system preferably provides fair and complete access to the trading process to all registered participants.

At column 6, lines 15-20, please replace the paragraph there with:

B15
To better appreciate the following details, the nomenclature is defined below. The illustrative examples herein all focus on fixed income instruments and the trading of these instruments in large volumes -- with the volume of a given transaction delineated in, but not limited to, dollars (e.g., \$25 million of 10 year treasuries).

At column 6, line 63 through column 7, line 8, please replace the paragraph there with:

B16
To control trading between many Participants, a level of hierarchy is set. A customer who hits on a bid or lifts an offer is promoted to a new level known as the "aggressor". By acting on a bid or offer, the aggressor defines (and thus establishes) the active side of the trade. For example, if the consumer hits a bid, selling becomes the active side of the trade and buying turns passive. However, if the customer lifts an Offer, buying is active. This is an important practical consideration, as by convention the active side pays commissions on the ensuing transactions. This allocation of commissions is premised on the notion that the active customers are taking advantage of liquidity -- while the passive side is supplying liquidity to the market.

At column 7, lines 23-31, please replace the paragraph there with:

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Figure 1 depicts the various hardware components found in an operative embodiment of the present invention. In this context, a plurality of workstations 10 are provided, each individually linked to a central server 20 via network lines 15. Server 20 includes controlling software for managing the interaction of the dataflows to the individual workstations 10 in accordance with system constraints.

At column 8, lines 7-20, please replace the paragraph there with:

B18

The foregoing operation will result in the real time distribution among work stations for decision execution and for select distribution within the fixed income investment community. In the context of the present invention, three segments of this community are provided with the data. At block 180 and block 170 system proprietors involved in automated options and futures processing are provided the securities data for quantifying and evaluating specific options and futures positions pursuant to the trading of option and futures contracts on individual securities. In a similar manner, the securities data is provided to system proprietors regarding options and futures contracts to permit proper transactions in the trading of options and futures contracts based on the individual securities data.

At column 8, lines 38-52 please replace the paragraph there with:

B19

During processing, various "states" are reached, depending on the type of inputs received by the system. The core state is the "Bid-Offer" State and reflects the open status of the market. In this state, customers are referred to as "makers" and "contra-makers"; during all other states, customers are considered "traders" and "contra-traders". Under this notation, traders and makers are those customers that issue a trading command, while contra - makers and contra - traders are those who receive a trading command. The initial participants in the Workup State (i.e., the Aggressor and the first customer on the passive side) are known as "current workers" and are vested with the authority under system control to hold up a trade for a predetermined duration of time. Important character distinctions between customers at various stages of trade processing are displayed to the broker on screen by reverse highlight or similar.

At column 8, lines 53-60, please replace the paragraph there with:

B20

The interrelationship of these five system "states" is depicted in FIG. 4. Initial trading is always predicated on the Bid/Offer State 400, with sequence processing 420, assessing system inputs for a change is triggered and processing shifts to the

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paradigms associated with (i) When, (ii) Workup, (iii) Workdown, and (iv) Second Look. As each state is entered, the protocols are shifted and new rules to trading apply.

At column 9, lines 23-29, please replace the paragraph there with:

B21

Above the BOT and SOLD captions in QUAD 1, a second totals counter provides the Makers total size. In the Bid-Offer State, this total is the same as the conditional prompt because no trades have been executed. This changes after the first transaction when a "traders list" is created -- and the conditional prompt tracks the traders total, while the Maker's total keeps track of quantity left in the Maker's list.

At column 9, lines 40-51, please replace the paragraph there with:

B22

The following discussion now focuses on the Bid/Offer State, wherein market makers are inputting various bids and offers into the system while waiting for an execution as the market matures. These pending commitments may be acted upon via hit or lift commands entered by makers currently showing or by a third party without showing its position prior to the hit (or lift). As new bids and offers are made, the price attendant therewith determines the placement in the queue, with equally priced offers (or bids) placed in time order.

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Accordingly, as the market tightens with better bids and offers (reducing the spread), these new positions are moved to the top of the queue as displayed.

At column 10, lines 15-21, please replace the paragraph there with:

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The system in logic associated with the Bid-Offer State is depicted in Figure 6. Logic conceptually begins at block 600, with the data/command entry block at 620. The State Selector qualifies the State as Bid/Offer, block 620. At block 630, the CUST X profile is taken from the new entry and all associated data passed into a parameter string, block 640, which is entered.

At column 11, lines 4-9, please replace the paragraph there with:

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In particular, as noted above, the uncleared status exists for a defined interval - controlled by computer driven timer. It is only during this interval that a When State can be instituted, which can then only last until resolved by either the action of the first best original Makers on the active side, or by the expiration of the interval timer within system logic.

At column 11, lines 45-49, please replace the paragraph there with:

B25

When State processing is depicted in Figure 7 and is triggered by a trading command CMD(I), block 810. Test 820 confirms that the new trading command (Hit or Lift) is from a new Aggressor; if not, logic continues to block 880 and to either Workup or Workdown State.

At column 11, line 59 through column 12, line 6, please replace the paragraph there with:

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The following sequence reflects the foregoing system logic. In QUAD 3A below, the Bid/Offer State has two customers, 3003 and 3002 each showing bids at 10 million; customer 3007 has just placed an uncleared offer for 1 million. Customer 3001 wishes to lift the new offer by customer 3007 - but he can't automatically. In QUAD 3B below, customer 3001 attempts to lift the offer by customer 3007 forcing the system into the When State, and creates an uncleared list for the active side (bid here). However, the prequantity of the first two bidders is reduced to zero - as the system logic requires that these bids cannot be enforced at the new price point (108.04+). In this example, the second interval timer provides both original Makers (3002 and 3003) priority over customer 3001; with customer 3002 retaining overall priority via its placement in the queue.

At column 14, lines 44-52, please replace the paragraph there with:

B27

The Second Look State is governed by logic depicted in Figure 9. In this arrangement, the trading command is entered-time stamped at block 1020. The extant passive maker entries are also entered, block 1030 and Test 1040 determines if the Passive Side entries, PASS(ID) are "aged", i.e., not just recently entered. If yes, logic branches to Test 1090, to determine if PASS(ID) is the last entry, PASS-END. If not, the next one is incremented with logic returning to the sequence start.

At column 14, lines 59-67, please replace the paragraph there with:

B28

These principles are delineated in the following sequence of screen displays in QUADS 5A-5C below, wherein CUST 3001, 3002 and 3003 are showing 5 million, 1 million and 1 million, respectively, as having been bought. Just prior to the sell order by CUST 3007 (HIT ALL), CUST 3004 enters with a 1 million size. All size transacts, except this late 1.0 million as it had not "aged" sufficiently - as measured by system interval timer. This amount remains untraded and the system enters the Second Look State.

At column 15, lines 49-60, please replace the paragraph there with:

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The Workdown State allows new Aggressors to complete the remaining un-hit bids on the passive side

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with logic conforming to the flowchart of Figure 10. In this process, the Trading command, CMD(I), is entered at block 1210. At Test 1220, the system confirms that the trade is for less than the total passive side, TOTL. If not, logic branches to block 1280 and is directed to the Workup State.

At column 16, lines 23-27, please replace the paragraph there with:

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In QUAD 6A, the Bid/Offer State is depicted with CUST 3001 showing a bid of 5 million. As the Aggressor, CUST 3001 lifts an offer from CUST 3007, but for only 5 million of CUST's 3007 showing of 25 million; leaving 20 million on the passive side. See QUAD 6B.

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In the Drawings

Please approve the following amendments of FIGS. 1 and 4, which are indicated in red ink on the attached copies of sheets 1 and 6 of the drawings, so that corrected formal drawings can be filed:

FIG. 1, please add reference numeral 15 and a lead line to the lines connecting workstations 10 and server 20.

FIG. 4, add reference numeral 400 and a lead line to the "bid offer state" oval; and